

1. (Currently Amended) A method of factoring operating system
2 functions comprising:

3 defining criteria that governs how functions of an operating system are to
4 be factored into one or more groups;

5 factoring the functions into one or more groups based upon the criteria; and
6 associating groups of functions with programming objects that have data
7 and methods, wherein the methods correspond to the operating system functions
8 effective to provide an object oriented operating system, the programming objects
9 being configured to be instantiated throughout a remote computing system.

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11 2. (Original) The method of claim 1, wherein the programming objects
12 have interfaces through which the methods can be accessed.

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14 3. (Original) The method of claim 1, wherein the programming objects
15 comprise COM objects.

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17 4. (Original) The method of claim 1, wherein said factoring comprises
18 creating a hierarchy of object interfaces in which certain interfaces can inherit
19 from other interfaces.

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21 5. (Original) The method of claim 1, wherein said factoring comprises
22 creating a hierarchy of object interfaces in which certain interfaces can aggregate
23 with other interfaces.

1 6. (Original) The method of claim 1 further comprising instantiating a
2 plurality of programming objects across a process boundary.

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4 7. (Original) The method of claim 1, further comprising instantiating a
5 plurality of programming objects across a machine boundary.

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7 8. (Original) The method of claim 1, wherein the criteria is based, at
8 least in part, on the manner in which particular functions behave.

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10 9. (Original) The method of claim 8, wherein the manner includes a
11 consideration of the types of operating system resources that are associated with
12 the operation of a function.

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14 10. (Original) The method of claim 8, wherein the manner includes a
15 consideration of whether a particular function creates an operating system
16 resource.

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18 11. (Original) The method of claim 8, wherein the manner includes a
19 consideration of whether a particular function operates upon an operating system
20 resource.

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22 12. (Original) The method of claim 1, wherein the criteria is based, at
23 least in part, on the manner in which particular functions behave, wherein the
24 manner includes:

1 a consideration of the types of operating system resources that are
2 associated with the operation of a function; and
3 a consideration of whether a particular function creates an operating system
4 resource.

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6 13. (Original) The method of claim 1, wherein the criteria is based, at
7 least in part, on the manner in which particular functions behave, wherein the
8 manner includes:

9 a consideration of the types of operating system resources that are
10 associated with the operation of a function call; and

11 a consideration of whether a particular function operates upon a given
12 operating system resource.

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14 14. (Currently Amended) A method of factoring operating system
15 functions comprising:

16 factoring a plurality of operating system functions that are used in
17 connection with operating system resources into first groups based upon first
18 criteria;

19 factoring the first groups into individual sub-groups based upon second
20 criteria; and

21 assigning each sub-group to its own programming object interface, wherein
22 a programming object interface represents a particular object's implementation of
23 its collective methods effective to provide an object-oriented operating system,
24 wherein individual objects having associated programming object interfaces are
25 configured to be instantiated throughout a remote computing system.

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2 15. (Original) The method of claim 14, wherein the first criteria is based
3 upon the type of resource that is associated with an operation of a function.

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5 16. (Original) The method of claim 14, wherein the second criteria is
6 based upon the nature of an operation of a function on a particular resource.

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8 17. (Original) The method of claim 16, wherein said nature concerns
9 whether a function creates a resource.

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11 18. (Original) The method of claim 16, wherein said nature concerns
12 whether a function does not create a resource.

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14 19. (Original) The method of claim 14, wherein the first criteria is based
15 upon the type of resource that is associated with an operation of a function, and the
16 second criteria is based upon the nature of an operation of a function on a
17 particular resource.

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19 20. (Original) The method of claim 14, wherein at least one interface
20 inherits from another interface.

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22 21. (Original) The method of claim 14, wherein at least one interface
23 aggregates with another interface.

1 22. (Original) The method of claim 14 further comprising instantiating a
2 plurality of programming objects across a process boundary.

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4 23. (Original) The method of claim 14 further comprising instantiating a
5 plurality of programming objects across a process boundary and a machine
6 boundary.

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8 24. (Currently Amended) A method of factoring operating system
9 functions comprising:

10 factoring a plurality of operating system functions into interface groups
11 based upon the resources with which a function is associated;

12 factoring the interface groups into interface sub-groups based upon each
13 function's use of a handle that represents a resource; and

14 organizing the interface sub-groups so that at least one of the interface sub-
15 groups inherits from at least one other of the interface sub-groups, individual
16 interface sub-groups being associated with individual programming objects that
17 can be instantiated throughout a remote computing system.

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19 25. (Original) The method of claim 24, wherein said organizing
20 comprises aggregating at least one of the interface sub-groups.

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22 26. (Original) The method of claim 24, wherein the interface sub-groups
23 are associated with COM objects.

1 27. (Original) The method of claim 24, wherein the factoring of the
2 interface groups into interface sub-groups comprises considering whether a
3 function creates a handle.

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5 28. (Original) The method of claim 24, wherein said organizing
6 comprises aggregating at least one of the interface sub-groups, and wherein the
7 factoring of the interface groups into interface sub-groups comprises considering
8 whether a function call creates a handle.

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10 29. (Previously Amended) An operating system application program
11 interface embodied on a computer-readable medium comprising a plurality of
12 object interfaces, wherein each object interface is associated with an object that
13 includes one or more methods that are associated with and can call functions of an
14 operating system that does not comprise the object interfaces, individual objects
15 being configured to be instantiated in process, locally, or remotely.

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17 30. (Original) The operating system application program interface of
18 claim 29, wherein the object interfaces are arranged in groups in accordance with
19 the types of objects with which their operation is associated.

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21 31. (Original) The operating system application program interface of
22 claim 29, wherein the methods within some of the interfaces are arranged in
23 accordance with whether they create an object.

1 32. (Original) The operating system application program interface of
2 claim 29, wherein the methods within some of the interfaces are arranged in
3 accordance with whether they do not create an object.

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5 33. (Original) The operating system application program interface of
6 claim 29, wherein the methods within some of the interfaces are arranged in
7 accordance with whether they operate upon an object.

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9 34. (Original) The operating system application program interface of
10 claim 29, wherein at least some of the object interfaces are arranged so that they
11 inherit from other of the object interfaces.

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13 35. (Original) The operating system application program interface of
14 claim 29, wherein at least some of the object interfaces are arranged so that they
15 aggregate with other of the object interfaces.

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17 36. (Currently Amended) An operating system comprising:
18 a plurality of programming objects having interfaces, wherein the
19 programming objects represent operating system resources, and wherein the
20 interfaces define methods that are organized in accordance with whether they
21 create an operating system resource or not;

22 wherein the programming objects are configured to be called either directly
23 or indirectly by an application; and

24 wherein the methods are configured to call operating system functions
25 responsive to being called directly or indirectly by an application;

1 said programming objects being configured to be instantiated throughout a
2 remote computing system.

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4 37. (Original) The operating system of claim 36, wherein some of the
5 objects are disposed across at least one process boundary.

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7 38. (Original) The operating system claim 36, wherein some of the
8 objects are disposed across at least one machine boundary.

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10 39. (Previously Amended) The operating system of claim 36, wherein at
11 least some of the objects are disposed across at least one process boundary and at
12 least one machine boundary.

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14 40. (Previously Amended) The operating system of claim 36, wherein
15 the objects comprise COM objects.

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17 41. (Currently Amended) A method of converting an operating system
18 from a non-object-oriented format to an object oriented format, wherein the
19 operating system includes a plurality of operating system functions that are
20 callable to create or use operating system resources, the method comprising:

21 defining a plurality of programming object interfaces that define methods
22 that correspond to the operating system functions, wherein programming objects
23 that support the interfaces are callable either directly by an application that makes
24 object-oriented calls, or indirectly by an application that makes function calls, said

1 programming objects being configured to be instantiated throughout a remote
2 computing system;

3 calling a programming object interface either directly via an object-oriented
4 call, or indirectly via an indirection that transforms a function call into an object-
5 oriented call; and

6 responsive to said calling, calling an operating system function with a
7 method of the programming object that supports said programming object
8 interface.

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